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ABSTRACT

A study was designed to discover whether readers use simple story grammar categories (setting, beginning, development, and conclusion) to organize the propositions of a story. Selected proficient readers were given a list of randomly ordered propositions that made up a simple story structure. Each reader was instructed to group the propositions into a set of categories. The category sorts obtained from the readers were compared, through the use of Target Partition Analysis, to the categories that J. Mandler and G. Johnson used to outline a prototypical story structure. The results indicated that readers initially ordered the propositions correctly but did not group them into the target categories. The largest discrepancies occurred in the placement of the beginning and development propositions. These results indicated that the prototypical story structures outlined in current story grammars do not conform to the schema that many readers hold for a typical simple story. (RAM)

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The purpose of this study was to discover whether one simple story grammar categories to organize the propositions of a story. The fact that stories can be parsed by researchers into identifiable common parts has been well-established by research into the nature of text. Stories, as text, can be analyzed on two levels simultaneously. The first level is the search for an underlying text base, which can be defined as a propositional representation of the meaning of the text. The second is the search for broad categories into which the text base can be fitted, which gives rise to story grammars.

Rumelhart (1975), Mandler and Johnson (1977) and Rumelhart (1975, 1977) have all defined general categories that can be used to describe stories. These categories are usually hierarchically ordered to match the schema that all readers within a culture are assumed to have about a story. Each of these story grammars shares the assumption that well-formed stories consists a setting, a beginning, development and a resolution. The development may consist of only one episode, or a whole series of episodes that occur in a particular order.

In a story grammar, the smallest unit is not the word or sentence, but the proposition. Propositions correspond to one pattern, or terminal node, in the hierarchically ordered story grammar categories. Propositions, thus, are determined by the larger structure of the grammar. A proposition could be as small as a clause, or as large as several sentences.

Story grammars were first used as a descriptive tool. However, research researchers have attempted to show that story grammar categories have a psychological validity, and that they affect recall. The most frequent assumption is that story grammar categories are actually a part of the readers' schemata for a story, so that the story is remembered in terms of these categories.

Thorndyke, for example, has shown that readers encode for the structure in a story, and use the structure to aid recall of the story. Thorndyke (1977) analyzed a story grammar based on goals, actions and resolutions. The rules of the grammar break the story down into smaller and smaller parts. Using this structure, Thorndyke (1977) varied the structure of prose in four different ways, ranging from a highly structured narrative form to a passage with very little cohesion. When the structure and cohesion were absent, recall was poorest. Thorndyke accounts for this result by assuming that the structure aided recall. When the goal structure rules were violated the subjects found it difficult to recall the text. In a second experiment, Thorndyke (1977) varied the comprehension of the story as well as the plot structure. He found that the more complete the passage was, the more accurate the recall. Thorndyke hypothesized that the more complete passage had a more easily identified structure, and that this structure aided recall.

Using a similar story grammar structure, which assumes that stories can be broken down into propositional categories, Mandler and Johnson (1977) hypothesize that the story grammar is used as a retrieval mechanism during recall. The story grammar is a representation of a possible story schema. The reader uses this schema to provide a general framework for the story. If the story conforms to this schema, predictability is increased, and the story is more easily recalled. Mandler and Johnson found that the basic order of the story grammar were best recalled. Distortions of these order were poorly recalled, and order that were operationally definable were also less well recalled.

In this study readers' ability to group the parts of a story into the same set of categories as outlined in story grammar was examined. The basic question was whether readers would choose to form the same basic four categories from a set of propositions as a target skilled

form Hawkins and Johnson's story grammar (1977).

Subjects: Nineteen undergraduate psychology students from a local private four year college volunteered to participate in the study during a regular class session. As far as the instructor could determine, the students were not familiar with the story or story grammar categories through the course curriculum.

Materials: The story used was an eleven proposition simple story called the Dog and the Bone (Hawkins and Johnson, 1977). The story is represented in Figure 1.

The propositions were partitioned into four categories: setting, beginning, development and resolution. The propositions themselves represent the end nodes in these categories. The four categories, as delineated in Figure 1, represent the target.

Procedure: The propositions were randomly ordered. All students read the propositions in this scrambled form, as presented in Figure 2. The students were instructed to "sort the pieces of this story into categories based on how you see them as similar or alike. There is no single correct way to sort, just form between 2 and 8 categories." The categories formed by the students were written on the paper containing the propositions, and then the papers were collected. Students used approximately 15 minutes to complete the task.

Results: The partitions of the propositions were recoded to the categories suggested by Hawkins and Johnson using a method called Target Partition Analysis (Trabasso, Stein and Johnson). TPA represents a way to test hypo-

hypotheses about how subjects choose to group or cluster items, based on both Latent Partition Analysis and Hierarchical Clustering Analysis.

The results of the SPA indicate that many subjects did not sort the eleven propositions into the four pre-specified categories. Though most subjects were able to sort the first and fourth categories of the target, the propositions within the beginning and development categories were intermingled.

Figure 3 shows how the first five subjects sorted the propositions. The first one indicated the propositions in order. The next one showed the sorting of the essential propositions. The third one showed how those non-essential propositions were grouped, and the fourth one showed the target, once the propositions are unscrambled. The subjects' sorts are as follows.

Figure 3

		1	2	3	4	5	6	7	8	9	10	11
		6	6	7	8	10	1	11	5	6	4	3
		1	1	2	2	3	3	3	3	3	3	4
		3	3	4	1	3	1	3	3	3	3	3
Subject	1	2	2	2	3	2	1	3	1	1	1	1
	2	3	3	4	1	3	1	3	4	4	3	3
	3	4	3	2	1	3	1	3	2	2	3	4
	4	3	3	4	1	4	1	3	4	4	3	3
	5	3	3	3	1	3	1	3	1	1	3	3

In the sample above, student 1 sorted proposition 6 into the second category, proposition 7 into the third category, proposition 8 also into the third category, and so forth.

The summary of these 30 cases showed that most students were able to sorted the propositions into the correct order according to the story. However, once the propositions were scrambled, the subjects differed as to how to break them into categories.

Only four of the nineteen subjects sorted the propositions into

four categories. Subjects tended to sort into five categories, splitting the four-category theory into two categories. Eighty-nine per cent of the subjects put items 6 and 4 into the same category, but only 44% put items 1, 11, 2, 3, 8 and 9 into the same category.

DFA also provides an estimate of which propositions the centers placed together, and a distance measure of how closely an individual center matched the pre-specified category. For example, center 17 was best able to replicate the target categories. There was only one difference between this user and the target, namely proposition 11 was included in the fourth category rather than the third. In contrast, center 11 had a very poor fit to the target. In looking at the items combined by target category, it becomes clear that most subjects were able to match the target for the first and fourth categories. Only one subject did not group propositions 6 and 4 into the first category, and all subjects but one put proposition 3 into the last category. However, the grouping of categories was not those to such were matched. Only five people grouped propositions 5, 7 and 10 into category two, and no subject grouped propositions 1, 2, 8, 9 and 11 into the third category. This DFA indicates that subjects had difficulty identifying which propositions formed the boundaries in this simple theory.

Conclusion: The results from this analysis indicate that these subjects did not closely identify the four prototypical theory categories hypothesized by Hamlyn and Johnson. Though the subjects matched the target for the propositions that make up the first and last categories, they did not match the middle categories of the target. The third category of the target in particular was not produced by any subjects. Two tentative conclusions are possible. The first is that the subjects could easily identify the endings and the end by their typical extreme structure. For example, the last

proposition of the target was "and was never seen again." This statement is similar to "and they lived happily ever after" in that it typically marks an end to a story. In contrast, the propositions in the beginning and development categories of the target gave few syntactic cues to differentiate them. Each categories actually described an action of the dog, and seemed to be connected only by temporal order. A second explanation might be that the prototypical categories described by Mandler and Johnson are not typical for readers, when the text is short. Readers may have other expectations for the text that are not related to text superstructure, such as matching common words in sentences.

A third explanation is that story grammar categories are not fixed in the minds of the readers, but are modified to accommodate a particular text. Rumelhart and Norman (1976) suggest that the schema for a story can only exist mentally, but interacts with the information in the story. Schemata are constructed by experience and expectations, and they are also actively engaged in the comprehension process. Rumelhart and Norman label this process tuning and restructuring. Thus the interaction of the schema and the text can produce new schemata, which are then retained in memory.

Collins, Brown and Larkin (1977) describe this process as one of model building. They state that the reader creates a complex scenario or model of the text, within which the events described might plausibly occur. This model may be modified by the information in the story, through a process of progressive refinement.

If this is the case, then the story grammar categories are not limiting. A story may be broken down in this way, but these categories do not necessarily reflect each reader's organization of the story. Instead, the categories are changing as the reader interacts with the text. The results from this study could even be support this model. Though the sample size was small,

constraining the kinds of generalizations that can be made, these subjects were unable to form the four categories that were expected. Instead, they formed categories based on other expectations for a short text, such as sentence organization.

Figure 1

Setting:	1.	It happened that a dog had got a piece of meat
	2.	and was carrying it home in his mouth.
Beginning	3.	Now on his way home he had to cross a plank lying across a stream.
	4.	As he crossed he looked down
	5.	and saw his own shadow reflected in the water beneath.
Development	6.	Thinking it was another dog with another piece of meat,
	7.	he made up his mind to have that also.
	8.	So he made a snap at the shadow,
	9.	but as he opened his mouth the piece of meat fell out,
	10.	dropped into the water,
Resolution	11.	and was never seen again.

Figure 2

1. Thinking it was another dog with another piece of meat,
2. As he crossed he looked down
3. and was never seen again.
4. and was carrying it home in his mouth.
5. So he made a snap at the shadow,
6. It happened that a dog had got a piece of meat
7. Now on his way home he had to cross a plank lying across a stream.
8. but as he opened his mouth the piece of meat fell out,
9. dropped in the water,
10. and say his own shadow reflected in the water beneath.
11. he made up his mind to have that also.

Randomly ordered propositions, as read by subjects.

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